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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/768,723

01/24/2001

Nan Zhang

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1220

23552

7590

07/27/2004

MERCHANT & GOULD PC

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MINNEAPOLIS, MN 55402-0903

EXAMINER

WANG, GEORGE Y

ART UNIT

PAPER NUMBER

2871

DATE MAILED: 07/27/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/768,723

Applicant(s)

ZHANG ET AL.

Examiner

George Y. Wang

Art Unit

2871

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 July 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5,7-9,11-22 and 24-28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-5,7-9,21,22,24-26 and 28 is/are allowed.
- 6) ☒ Claim(s) 11-20 is/are rejected.
- 7) ☒ Claim(s) 27 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 February 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on March 2, 2004 has been entered.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

2. Claims 11-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jerman et al. (U.S. Patent No. 6,134,207, from hereinafter "Jerman") in view of Roth et al. (PCT Pub. No. WO 02/21191, from hereinafter "Roth").

3. Regarding claims 11, 16-17, 19-20, Jerman discloses an optical switch apparatus (fig. 12, ref. 104) and method formed on a single substrate (fig. 12, ref. 213), having an input (fig. 12, ref. 98), four outputs (fig. 12, ref. 151), a first and second actuator (fig. 12, ref. 180) coupled to a first and second mirror (fig. 12, ref. 103), respectively, such that the mirrors, which are disposed parallel to each other and offset and spaced to each other (col. 15, lines 43-65), can be moved to and from a range of extended and retracted positions (col. 16, lines 25-47) to reflect various outputs.

However, the Jerman reference fails to specifically disclose a notch in the first mirror in order to allow light to pass without being reflected.

Roth discloses a optical switching and routing device having a mirror with a notch that lets light to pass without being reflected (fig. 5a, ref. 296).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have included a notch in the mirror in order to increase reflective output combinations. According to Jerman, the mirrors can be fully retracted or fully extended providing a wide range of reflections possibilities (col. 16, lines 38-47). Furthermore, having a mirror with a notch that is capable of allowing light to pass without being reflected not only increases output possibilities, but also increases error

tolerance without sacrificing the precision of the switch (Roth, pg. 7, lines 3-7). These advantages reduce the required fabrication costs, reduce coupling losses, and improve the overall robustness of switch and router assemblies (pg. 7, lines 7-9).

4. Regarding claims 12-15 and 18, Jerman discloses an optical switch apparatus and method as recited above with comb drives (col. 18, lines 30-47) for positioning the mirrors in retracted and extended positions, where the first and second mirror displaced at a combination of extended and retracted positions to reflection and transmission of optical signals into four outputs (col. 16, lines 25-47).

Allowable Subject Matter

5. Claims 1-5, 7-9, 21-22, 24-26, and 28 are allowed.

The following is an examiner's statement of reasons for allowance: As the claims were read and interpreted in light of the specification, the prior art of record fails to specifically disclose an optical switch having an input with four outputs with mirrors positioned in a first and second extended position and a retracted position such that the various combination of positions takes an optical beam input and provides four outputs.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

6. Claim 27 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: As the claims were read and interpreted in light of the specification, the prior art of reference fails to specifically disclose an optical switch as recited in claim 16 with only two mirrors, including a first and second mirror.

Response to Arguments

7. Applicant's arguments filed March 2, 2004 have been fully considered. They are persuasive for claims 1-5, 7-9, 21-22, 24-26, and 28 but not for claims 11-20.

As to claims 11-15, Applicant's main argument is that neither the Roth nor the Jerman reference discloses a 1x4 configuration. However, Examiner asserts that nowhere in the claims is the language specific to a 1x4 configuration. Furthermore, the fact that there are at least four different optical outputs does not mean you have four different output ports or waveguides.

Regarding claims 16-18, Applicant's main argument is that neither the Jerman nor the Roth reference discloses a switch with an output to one of a plurality of different output waveguides. While the limitation to add "different output waveguides" is more structurally limiting, Examiner asserts that nowhere in the claim does it require four outputs. It could be interpreted as any number of optical output paths exiting one of "different output waveguides."

As to claims 19-20, Applicant's argument is based on the same reasoning as with Claim 11. The amendment here does recite that the switch is 1x4. However, Examiner notes again that the fact that there are at least four different optical outputs does not mean you have four different output ports or waveguides. It is clear from a broad interpretative stance that four different outputs could be understood as four different output paths.

Thus, Examiner holds to the validity of the references used and maintains the rejection of these claims.

Conclusion

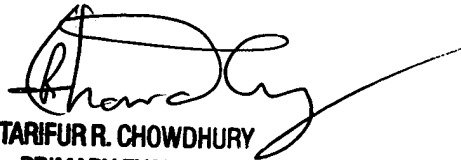
8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to George Y. Wang whose telephone number is 571-272-2304. The examiner can normally be reached on M-F, 8 am - 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert H. Kim can be reached on 571-272-2293. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2871

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

gw
July 21, 2004



TARIFUR R. CHOWDHURY
PRIMARY EXAMINER